PURIFICATION OF DRINKING WATER.

The burning question of the present age is how to obtain pure drinking water. In reference to this subject I would refer to a paper recently read by Dr. O. Froelich before the Electro-Technical Society of Berlin, May, 1891, in which he says: "That the attempt to destroy bacteria by means of Ozone has been effected with water from Berlin and neighborhood and always with the most complete success. The sterilization test takes place, as is known, in the following manner: A few drops of the water to be tested are placed by means of a sterilized platinum wire on sterilized nutrient gelatine, contained in a sterilized reaction tube closed with a plug of cotton wool. If the water contains bacteria their cultures become visible in the form of opaque grains and tubercles, which continue growing. Even if by such experiments the sterilization of ordinary water is established, it is still doubtful if the less common bacteria, viz., those generating disease—typhus, cholera, anthrax, etc.—and their spores are destroyed. The question can only be determined by experts, although there is every indication that it will be solved in a manner favorable to ozone.

The ozonization of water acts besides in destroying noxious or disgusting substances or transferring them into harmless ones. Sulphuretted hydrogen is separated into sulphuric acid and water, ammonia becomes nitrate or nitrite of ammonia, iron is precipitated as ferric-hydrate, and finally, bacteria which generate decay are probably all killed. We have also good reason to assume that even the worst ordinary water can be made drinkable by means of ozonization. Disinfection by ozone has properties not appertaining to other methods of disinfection. In contradistinction to sterilization by boiling, ozonization is quicker and cheaper, and as opposed to disinfection by chemical means, such as sulphurous acid and chlorine, etc., it has the greater advantage of leaving no traces behind it in the water. Of course some ozone is absorbed by the water, but the amount is so insignificant that it is not perceptible to the taste. The ozone gas goes through the water, does its work, *i.e.*, kills the bacilli, probably completely, and leaves the water in the same condition in which it entered it.

"How much ozone is taken up by the water in passing through has not yet been established. Shortly, however, larger apparatus will be prepared which may be considered as models of water ozonization, from which can be determined the working power and cost of ozonization for any quantity of water.

"The solid earthy matter held in suspension by water is not affected by ozone; filtration will therefore be a necessity in the ozonization process. The filtering plants heretofore employed have served not only for the removal of the solid matter in suspension, but have also answered the purpose of collecting the greater part of the bacteria and this takes place generally by means of the coating of algæ which is formed on the layer of filtering material. The ozonization of the water, however, answers the purpose of the coating of algæ, but in a much more complete manner. The algæ cannot survive in ozonized water, as has been established by actual experiment, and therefore the laborious upturning of the filtering layer, which has hitherto been the practice in order to prevent the coating of algæ from becoming too thick, is done away with.

"The proper discussion of the ozonization of water can only take place after the cost of ozonization has been more exactly ascertained; nevertheless, so much is thus far apparent, that a fundamental discussion of this question cannot be avoided, particularly in cases in which good drinking water can only be obtained at great cost, bad drinking water, on the other hand, easily obtainable and by ozonization converted into good. The question further arises whether, generally considered, impure water, such as the waste water of towns and factories, cannot be fitly treated by means of ozone. In waste water the bacilli generating decay would in this manner be killed, the ammonia probably converted into nitrate of ammonia and the organic constituents further oxidized as far as possible."—(Elektrotechnischen Zeitschrift, 1891, Heft 26.) C. B.

PSYCHOLOGICAL.

THE ACTION OF STRYCHNINE UPON THE CEREBRUM.

Biernacki has investigated the action of strychnine upon the cerebrum. Hithertofore it has been held almost as a dogma that strychnine has no influence upon the cerebrum, but only upon the gray substance of the spinal cord and medulla oblongata. According to Biernacki, this is not correct. He found in rabbits, even after the subcutaneous injection of small doses of the nitrate of strychnine, that the